Questioned Documents Unit (QDU)
Procedures for Conducting Polyethylene Film Product Examinations

1 Scope

These procedures will be used by a forensic examiner who is qualified in the nondestructive examination of polyethylene film products. Polyethylene film is usually in the form of plastic bags, but may also come in the form of a variety of other plastic products. Redacted

It should be noted that these procedures do not apply to determining the chemical composition of polyethylene film products, which requires destructive testing.

2 Equipment/Materials/Reagents

- Fostec 150 watt tungsten halogen light, or comparable equipment
- Laboratory Supplies Co., Inc. 30 watt transmitted light box, or comparable equipment
- Hand magnifier (minimum magnification, 4X)
- Leica stereomicroscope (minimum magnification, 6.3X), or comparable equipment
- Foster and Freeman Video Spectral Comparator (VSC), or comparable equipment
- Ruler marked in a minimum of 1 millimeter and/or 1/16 inch increments.
- 3M Glare-Stop polarizing filters of various sizes (usually between 6” and 18”), or equivalent

Redacted

3 Standards and Controls

Not Applicable.

4 Sampling

Not Applicable.

5 Procedures

5.1 Observations

The following procedures will be performed when applicable. The procedures need not be performed in the order given.

5.1.1 Examinations, notations, and results will be recorded in the examination records.

5.1.2 Make a record of the polyethylene film, usually by free-hand sketch.

5.1.3 Visually evaluate the polyethylene film evidence, to the extent possible, to determine general class characteristics Redacted

A ruler will be used to record measurements.

Redacted

5.2 Comparisons

5.2.1 If an evidential item does not correspond to another evidential item in general class characteristics, Redacted no side-by-side comparison is necessary. Report that the items were not manufactured from a common source or did not originate from a common source.

5.2.2 If two or more evidential items correspond in general class characteristics, compare items for common manufacturing characteristics, Redacted

5.2.2.1 If two or more evidential items correspond in general class characteristics but do not correspond in manufacturing characteristics, report that the items were not manufactured from a common source Redacted
The items, however, correspond in general class characteristics.

5.2.3 If two or more evidential items correspond in both general class characteristics and manufacturing characteristics, examine the items for individualizing characteristics Redacted

Visually analyze and conduct a side-by-side comparison of the polyethylene items using a transparent light source, polarizing filters if necessary, or the VSC or comparable equipment.

5.2.3.1 If two or more evidential items correspond in both general class characteristics and all or the majority of manufacturing characteristics, but do not correspond in individualizing characteristics, report Redacted
However, the items correspond in general class characteristics and manufacturing characteristics.

Redacted

5.2.3.3 If two or more items correspond in general class characteristics and possible manufacturing characteristics but there are significant limiting factors, an inconclusive result is appropriate. Additionally, if two or more evidential items correspond in both general class characteristics and manufacturing characteristics, but lack observable individualizing characteristics, report that the items correspond in general class characteristics and manufacturing characteristics. Redacted

5.2.4 Record in the examination records all notes, printouts, photographs, overlays, or drawings used to support the conclusions derived from the examination.

Redacted

Redacted

6 Calculations

Not Applicable.

7 Measurement Uncertainty

Not Applicable.

8 Limitations

The following factors could affect the examination process and/or the results rendered:

- Redacted

- Limited quantity of questioned and/or known items.
- Prior destructive forensic examinations such as latent print processing.
- Lack of sufficiently suitable characteristics for comparison.

9 Safety

Standard precautions should be followed for the handling of chemical and biological materials. Examiners/analysts may refer to the *FBI Laboratory Safety Manual* for additional guidance. Chemical and biological materials that are hazardous or potentially hazardous will be maintained and examined in specifically designated areas within the QDU space.

10 References

PRIDE Instruction Manuals

PRIDE Training Manual

FBI Laboratory Safety Manual

Castle, D.A., Gibbins, B., Hammer, P.S., Physical Methods for Examining and Comparing Transparent Plastic Bags and Cling Films, *Journal of Forensic Science Society*, 1994; 34:61-68.

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Pierce, David S., Identifiable Markings on Plastics, *Journal of Forensic Identification*, 1990.

Stanko, Richard F., Attenberger, David W., The Evidentiary Value of Plastic Bags, *FBI Law Enforcement Bulletin*, 1992.

USI Chemicals Company, “How to Solve Blown Film Problems”, *USI Technical Brochure*, Cincinnati, Ohio.

Vanderkolk, John R., Identifying Consecutively Made Garbage Bags Through Manufactured Characteristics, *Journal of Forensic Identification*, 1995.

von Bremen, U.G. and Blunt, L.K.R., "Physical Comparison of Plastic Garbage Bags and Sandwich Bags," *Journal of Forensic Sciences*, JFSCA, Vol. 28, No. 3, July 1983, pp. 644-654.

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Rev. #	Issue Date	History
4	03/03/15	Changed Header to read "QDU Standard Operating Procedures Manual". Section 2 modified descriptions of equipment to be consistent with other unit documents. Removed Section 4 and renumbered document accordingly. Section 5.1.1 changed "shall" to "will". Sections 5.1.5 and 5.2.2 changed "specimen" and "specimens" to "item" and "items", respectively. Section 5.2.3 changed "equivalent' to "comparable equipment". Section 5.3.1. first bullet changed "Identification" to "Items at One Time Attached" and added "general, manufacturing, and". Added "Items" to second and third bullets. Section 7 changed "Uncertainty of Measurement" to "Measurement Uncertainty".
5	03/01/18	Deleted "properly trained", added "qualified"

Redacted - Signatures on File

Approval

Questioned Documents Unit Chief — Date: 02/28/2018

Questioned Documents Technical Leader — Date: 02/28/2018

QA Approval

Quality Manager — Date: 02/28/2018